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Childhood intussusception: The implications of delayed presentation

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ABSTRACT

Background: In some developing countries, many children with intussusception are reported to present late for definitive therapy. This study determines the effect of delayed presentation on clinical parameters, management, and outcome of childhood intussusception in southeast Nigeria. **Methods**: Comparative analysis of 87 consecutive children with intussusception managed from January 1998 to December 2007 at the University of Nigeria Teaching Hospital, Enugu, was done. **Results**: Overall, the mean time from onset to presentation was 3.0 days (range 4 hours to 7 days). Thirteen (14.9%) presented within 24 hours of symptoms (group 1) and 74 (85.1%) presented after 24 hours (group 2). Clinical presentations were similar in the children with the exception of bilious vomiting, rectal bleeding, and abdominal distension which were significantly commoner in group 2 children ($P < 0.05$). Type of intussusception found at operation did not differ in the groups, but cases in group 2 had higher incidence of bowel complications, and greater risk of failed operative reduction and bowel resection than group 1 patients ($P < 0.05$). Though the postoperative complications did not differ significantly between the two groups, mortality directly related to intussusception occurred only in patients who presented after 24 hours. **Conclusion:** Significant number of children with intussusception in our setting presented late for definitive treatment. These cases have a higher risk of bowel complications and intestinal resection. Outcome in these patients might be enhanced through improved perioperative care in the short term, or by improving access to, and reducing delays in seeking health care, in the long run.

Key words: Challenges, childhood, delayed presentation, intussusception, outcome

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INTRODUCTION

Intussusception is a common cause of gastrointestinal obstruction in infants and young children. The peak incidence is found in children aged between 4 and 6 months.[1,2] Clinical features are well documented to the effect that the definitive diagnosis and therapy in most cases of intussusception is expected to be undertaken within 24 hours of onset ofsymptoms.[2–4] Most reports from developed economies indicate that the time to diagnosis in the majority of cases of childhood intussusception is less than 24 hours.[1–5] In some developing countries, however, a considerable number of children with intussusception, for some ill-defined reasons, present late to the mainstream medical practitioners for treatment.[6–8] This delayed presentation might be a significant contributor to the poorer outcome of treatment reported in these settings.[9]

Most of the recent published studies on intussusception have paid scant attention to the scenario in children who present after 24 hours of symptoms.[3–6,10] Appreciation of the effects of delayed presentation on the management and outcome of intussusception may be imperative in developing feasible initiatives for better results of treatment for this subset of patients.

This retrospective study aims to look at the clinical picture, management, and treatment outcomes of childhood intussusception presenting after 24 hours of symptoms vis-à-vis those presenting earlier in southeast Nigeria.

MATERIALS AND METHODS

This is a retrospective study conducted at the University of Nigeria Teaching Hospital (UNTH), Enugu, Nigeria. Over a period of 10 years (January 1998 to December 2007), 87 children were managed for intussusception at UNTH. These cases were initially evaluated at the children emergency department before transferring to

the pediatric surgical unit. All the cases received fluid and electrolyte resuscitation. Diagnosis was based mainly on clinical and ultrasound evaluation. Definitive treatment in all these children involved operative intervention. None of the cases received contrast enema evaluation, and non-operative pressure treatment was not attempted in any of them.

Data on these patients were collected from the case notes, discharge summaries, and theatre records. Relevant information including patient demographics, clinical presentation, duration of initial symptoms before presentation, findings at operation and operative procedure, complications of treatment and outcome were transferred to statistical package for social sciences (SPSS 11.5 version).

For the purpose of this study, delayed presentation was defined as presentation after 24 hours of onset of symptoms. The clinical features, operative treatment, complications, and outcome were compared between the cases presenting after 24 hours and those presenting earlier, in order to determine the effect of delayed presentation on these variables.

Statistical analysis involved the use of SPSS to calculate mean values and standard deviation. Proportions were compared with χ^2 or Fisher's exact test. In all, critical P value of <0.05 was regarded as significant and conclusions were drawn based on this level of significance.

RESULTS

The 87 children comprised 13 (14.9%) who presented within 24 hours of symptoms (group 1) and 74 (85.1%) who presented after 24 hours of symptoms (group 2). Overall, 58 (66.3%) were males and 29 (33.3%) females, and the median age at presentation was 7 months (range 3 months–10 years).

Clinically, all the cases presented with abdominal pain. The other clinical features varied in the two groups. The other clinical features in group 1 patients included bilious vomiting 38.5% (5/13), rectal bleeding 30.8% (4/13), abdominal distension 38.5% (5/13), palpable abdominal mass 46.2% (6/13), and absent bowel sounds 7.7% (1/13). The clinical features in group 2 patients included bilious vomiting 83.8% (62/74), rectal bleeding 77.0% (57/74), abdominal distension 71.6% (53/74), palpable abdominal mass 51.4% (38/74), and absent bowel sounds 18.9% (14/74). Table 1 compares the clinical presentation in both groups.

Table 1: Comparison of the clinical presentation of intussusception in children presenting after 24 hours and those presenting earlier

Clinical features	Duration of symptoms		*P* value
	<24 hours (*n* = 13)	>24 hours (*n* = 74)	
Abdominal pain	13 (100%)	74 (100%)	—
Bilious vomiting	5 (38.5%)	62 (83.8%)	0.001*
Rectal bleeding	4 (30.8%)	57 (77%)	0.001*
Abdominal distension	5 (38.5%)	53 (71.6%)	0.024*
Palpable abdominal mass	6 (46.2%)	38 (51.4%)	0.729
Absent bowel sounds	1 (7.7%)	14 (18.9%)	0.294

*Statistically significant ($P < 0.05$)

Overall, the average duration of symptoms before presentation to our hospital was 3.0 days (range 4 hours–7 days).

At operation, cases in group 1 had ileocolic intussusception in 76.9% (10/13), ileoileal type in 15.4% (2/13), and colocolic type in 7.7% (1/13). In children of group 2, ileocolic 79.7% (59/74), ileoileal 9.5% (7/74), and colocolic 10.8% (8/74) types were found. Successful reduction of intussusception was undertaken in 84.6% (11/13) cases in group 1 compared to 54.1% (40/74) in group 2 ($P = 0.03$). For the rest of the 36 patients, the intussusception was either irreducible ($n = 24$: group 1 = 2, group 2 = 22) or was reduced but with necrotic bowel in 12 (all in group 2). Twenty-two of these cases had right hemicolectomy (group 1: 1/13; group 2: 21/74), and 14 (group 1: 1/13, group 2: 13/74) had limited ileal resection performed.

All the surgical wounds were closed primarily. None of the patients was managed in an intensive care unit.

Postoperatively, 33 patients developed a total of 51 postoperative complications. The complications were superficial surgical site infection (29 cases), superficial wound dehiscence (10 cases), adhesive small bowel obstruction (4 cases), and anastomotic leak (2 cases). There were three cases each of chest infection and incisional hernia. Superficial surgical site infection and superficial wound dehiscence were managed by local wound care. The cases with adhesive small bowel obstruction did well on non-operative management. On the other hand, the children who developed anastomotic leak or incisional hernia required operative treatment. After an average follow up of 10 months (range 3–29 months), there was no recurrence of intussusception among those who survived. The postoperative complications did not differ significantly between the two groups. Table 2 compares the postoperative complications between the two groups.

Table 2: Postoperative complications compared between the two groups of children with intussusception

Postoperative complications	Duration of symptoms		*P* value
	<24 hours (n = 13)	>24 hours (n = 74)	
Surgical wound infection	5	24	0.447
Superficial wound dehiscence	1	9	0.538
Adhesive small bowel obstruction	1	3	0.483
Chest infection	1	2	0.388
Incisional hernia	1	2	0.388
Anastomotic leak	0	2	0.721

A total of 7 (8.1%) children died between the 4th and 12th postoperative days. Death was due to septicemia in six (all in group 2) and aspiration pneumonitis in one (group 1).

DISCUSSION

It might be inferred from this study that in our setting, majority of children with intussusception present for definitive treatment after 24 hours of symptoms. This less than ideal situation has also been previously reported from some other developing countries.[7–9,11] Conversely, reports from many developed countries indicate that the time to diagnosis and intervention in a significant majority of cases is less than 24 hours.[2–5] To deal with this wide disparity, it may be imperative to address factors such as ignorance, poverty, and inadequate access to referral hospitals, highlighted by some previous studies.

Previous reports have indicated that delayed presentation predisposes to bowel complications.[4,5,10,12] This was reflected in the clinical presentation and the operative finding of the cases that presented after 24 hours of symptoms in the present report. Clinical features such as rectal bleeding, abdominal distension, and absent bowel sounds which may be indicative of devitalised bowel, were commoner in children who presented after 24 hours. In the same vein, appreciable number of irreducible and devitalised bowel found at operation in these cases may confirm increased bowel complications with prolonged interval, from symptom onset to definitive treatment. This implies that one should have a high index of suspicion for the possible presence of devitalised bowel and adequately prepare such patients for bowel resection in case there is need for it. The other operative finding, that is, the type of intussusception was not affected by delayed presentation. The import of this may be that the type of intussusception might not really contribute to a delay in diagnosis.

Currently, intussusception is optimally managed by air insufflations or hydrostatic enema.[1,3,5,13,14] Operative intervention is reserved for cases that were complicated at presentation or failed to respond to pressure treatment. In this study, all the patients were managed by operative intervention. This routine operative treatment in our setting may be related to factors that are still incumbent in some developing countries, viz., lack of facilities and trained manpower.[7-9,11] It might be argued that the high incidence of bowel complications in these cases with delayed presentation may favor routine operative intervention in most of them. The major drawback to this generalisation might be the report of some studies that recorded successful pressure reduction in some cases presenting after 48 hours,[15,16] as well as successful operative reduction in 54.1% of our cases with delayed presentation.

At operation, procedures have to be tailored according to the findings. In the present report, more children who presented after 24 hours of symptoms required bowel resection ostensibly for increased bowel complications. The bowel resection rate in our cases with delayed presentation is similar to what has been previously reported.[5,7,12,17]

The postoperative complications in this study comprised mostly general surgery complications. Understandably, the expectation might be that more complications are likely to occur in patients with delayed presentation, given the poor state of the intestines and their less than optimal general condition. Though the postoperative complication rate differed between the two groups, the absence of significant difference may point to other contributory factors in the development of complication in each patient. Such factors might include operative technique, tissue handling, antibiotics used, and wound management.

Recent reports from many developed countries indicate that mortality from childhood intussusception has steadily declined to well under 1%.[2,5,10,18,19] Most of the reported mortalities in these settings were associated with delayed diagnosis. In the present report, mortality directly related to intussusception was high and occurred only in patients who presented after 24 hours of symptoms. This may indicate that with diligent patient care, baring other circumstances, the outcome of intussusception presenting early in our setting may approach those in the more developed countries. As in some earlier studies,[7,8,20] septicemia accounted for the mortalities in this study. The factors that may contribute to the development of uncontrollable septicemia in

these patients need to be addressed in order to improve the outcome, though such factors may be difficult to determine in a retrospective study. Nonetheless, efforts geared towards improving the perioperative care of the patients might minimise mortality. Perhaps a more aggressive resuscitation, use of more potent antibiotics, and postoperative management in an intensive care setting for these patients with delayed presentation may provide short-term improvement of outcome. In the long term, improvements in time to diagnosis through maintaining a high index of suspicion, meticulous clinical evaluation, improved access to referral centres, and provision of basic radiodiagnostic facilities may be invaluable.

Limitations

This study was limited by the retrospective design. A prospective study would have given explanations for the delayed presentation and the possible areas for intervention.

CONCLUSION

A considerable proportion of children with intussusception present to the mainstream medical practitioners after 24 hours of symptoms in our setting. Cases presenting after 24 hours have higher incidence of bowel complications requiring resection, and higher mortality rates. Improving the perioperative care of these cases may improve the outcome. Efforts directed at improving time to diagnosis through enhanced referral system and improved access to referral centres diagnostic facilities may optimise the outcome in the long run.

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